## Space Weather Forecast

Issued on Wednesday, 30 August 2023 at 01:16 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Slight chance of isolated Moderate-class flares (R1-R2 Blackouts). Weak coronal mass ejection arrival possible Day 1 (30 Aug) with slight chance of Minor Storms.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has been Low over the past 24 hours, with mostly minor Common class flares observed. There are six sunspot regions on the visible disc, two of which are small and simple, however there are three sunspot groups of interest that are more complex. A new unnumbered sunspot has rotated onto the northeast disc in recent hours.
No new Earth directed CMEs (Coronal Mass Ejections) have been seen in available imagery over the last 24 hours.

**Solar Wind / Geomagnetic Activity:** Solar winds are Slow at around 350km/s. The interplanetary magnetic field, was mostly weak, and the important north-south component was weak throughout, and started mainly positive before turning negative (southward directed), for a time after 29/0830 UTC. Geomagnetic activity was Quiet (Kp 0-2).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms occurring.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** The current Low solar activity is expected to continue with a chance of an isolated Moderate flare. The most likely source for this activity probably from a region located in the southeast that produced the last moderate flare.

**Solar Wind / Geomagnetic Activity:** An incoming CME may give a glancing impact at Earth sometime on Day 1 (30 Aug), though this carries low confidence. There are no other Earth-directed CMEs currently forecast. Solar winds are at Slow levels with little probable change until the potential CME arrival. The next driver for solar winds looks to be a coronal hole fast wind enhancement which may bring an enhancement to slightly elevated levels, 450-500km/s, into Day 3 (01 Sep).
Geomagnetic activity is expected to remain generally Quiet. If the CME glance occurs on Day 1 (30 Aug), activity may become Unsettled to Active with a slight chance of Minor Storm intervals, with any effects easing into Day 2 (31 Aug) before potential coronal hole influence likely increases activity once again into Day 3 (01 Sep).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to persist at background levels, with just a slight chance of enhancement should any larger flares occur from the two larger sunspot regions on the visible disc.

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 20 | 5 | 10 | 1 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 20 | 20 | 20 | 20 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 5 | 5 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |
| * S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$) | | | | | | |

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